Rejection of claims 1-10 under Section 103(a)

The recitation of a rotary dressing tool in the preamble of Applicants' claims is a structural limitation. See page 1, lines 1-17, pages 3-4, the Description of the Drawings, and Fig. 1. The Court of Appeals for the Federal Circuit has ruled that such structural limitations are allocated significant weight in the evaluation of patentability over the prior art. Corning Glass Works v. Sumitomo Electric, 9 USPQ2d 1962, 1966 (Fed. Cir. 1989).

One skilled in the art of abrasive tool technology recognizes dressing tools as a separate class of tools from grinding machines (e.g., Naumann) and internal diameter grinding wheels (e.g., Fitzpatrick). The skilled practitioner also recognizes rotary profile dressing tools as a special class of dressing tools, different from single diamond grain ("mounted point") profile dressers, diamond cup wheel dressers and stationary diamond dressers (e.g., Tonshoff). Rotary profile dressing tools grind a small amount of surface material from the profiled grinding face of a grinding wheel in order to restore the precise shape of the profile and permit precision grinding of the profile into the surface of the workpiece.

The Tonshoff Patent

Applicants have been unable to locate any text in the Tonshoff patent disclosing " a dressing tool having a core, a backing element, and diamond abrasive rim (5)." The element identified as (5) is "a diamond cup wheel" and is not a dressing tool having a core, a backing element and a diamond abrasive rim. See col. 3, lines 17-18. A diamond cup wheel is generally understood to be a composite of a continuous phase of metal or resin or glass bond material and a discontinuous phase of diamond abrasive grain embedded in the bond as a three-dimensional composite matrix. It cannot be assumed that a diamond cup wheel is a tool having a "single layer" of diamond grain, and Tonshoff does not disclose this element, nor any other element critical to Applicants' claimed invention. There is no mention of a "backing element" in the diamond cup wheel. A backing element is not needed in a diamond cup wheel where the abrasive portion of the tool is a unitary body consisting of the bond/grain composite attached to a metallic bushing or core which then is mounted onto an arbor connected to a drive motor.

xpress disclosure of these three required el ments. In re Lee, 61 USPQ2d 1430 (Fed. Cir. 2002).

In the case of Applicants' invention, first, the Examiner's r jection of claims 1-10 fails to identify a suggestion or motive drawn from the references to modify the references or to combine the references. Second, Tonshoff's teaching of only a single diamond point dressing tool for profiled wheels (as opposed to teaching any profiled dressing tool) dampens any expectation of success or motivation to try Applicants' rotary profile dressing tool in Tonshoff's method of dressing grinding wheels. Third, the Tonshoff and Naumann references fail to disclose all of the claim limitations. For these reasons, the claimed invention is not obvious over the cited references.

Rejection of claims 11-12 under Section 103(a)

The Fitzpatrick Patent

Fitzpatrick describes internal diameter (ID) grinding tools. These tools comprise an expandable helical coil having an outer abrasive strip. The coil is mounted on a tapered arbor (i.e., a shaped rod core) having a central axis of rotation and an outer surface of a frustoconical shape. The ends of the coil are attached to the tapered arbor with threaded nuts. These tools are used to grind holes in workpieces. Fitzpatrick does not disclose dressing tools used to refurbish the grinding faces of grinding wheels. Fitzpatrick does not disclose disc -shaped cores having abrasive grain brazed to the perimeter surface of the core. Instead, a single coil "insert" is mechanically attached to the tapered arbor.

In contrast, Applicants claims 11 and 12 recite a disc-shaped core having a plurality of abrasive inserts mechanically fastened to the periphery of the disc-shaped core.

As noted on page 1, lines 10-17, prior art dressing tools often are made by hand setting individual diamond abrasive grains into a cavity of a mold and then pressing powdered metal around the diamond. Other, equally difficult and expensive processes are used in the industry to make rotary dressing tools.

None of the prior art suggests inserts can be made with either a single layer of diamond grains or diamond film inserts and fixed in place with an active metal braze. The active braze gives the diamond layer the mechanical strength needed to maintain th tip

radius for precision dressing and the capacity to dress the grinding wheels over a commercially acceptable life. This combination has never been suggested for rotary profile dressing tools.

Tonshoff and Naumann in combination with Fitzpatrick suggest nothing about rotary profile dressing tools.

Furthermore, in Claims 11 and 12, Applicants claim a rotary profile dressing tool made with abrasive inserts designed to be mechanically fastened (e.g., bolted) onto a core to form the dressing face. None of the references teach this construction. This innovation is a significant improvement because the precise machining of the core component needed to maintain the precise shape of the grinding wheel face is costly and the inserts can be expected to significantly reduce the cost of refurbishing these tool cores.

CONCLUSIONS

In view of the amendments and remarks submitted in this amendment, Applicants respectfully request an allowance of claims 1-12.

Respectfully submitted,

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